

Creating a Strain of Vienna Emerald Swords © Alan S. Bias



Shortly after relocating to Montana in late 2002 I procured a line of Lace Snakeskin Doubles from Enrique Patino, who in turn had acquired them a couple years earlier from European breeder Anette Wulff. The strain was very active and hardy. It produced fair sized litters on a regular basis. If I remember correctly they were all grey body and never dropped a gold (blond) during the time I worked with them.

From the start my interest in them was a bit one sided. While the snakeskin pattern in Double Sword was interesting to work with and pleasing to the eye, it masked traits that interested me the most. Around this time I had started a site for Swordtail breeders. Even though it had over 100 individuals subscribed, and included many of the worlds better known breeders of Swordtails, activity sputtered to a halt. Behind the scenes correspondence was much better and this allowed me to discuss strains with their creators.

It is pretty common knowledge that beneath all those circular swirls and spots comprising a lace snakeskin, or filigran as it is commonly known in Europe, is a hidden jewel in its own right - The Vienna Emerald Swordtail. So my dilemma was how to retrieve this hidden phenotype from within the existing genotype and not outcross? With some serious back crossing and a lot of luck. The luck would come in the form crossover to over power the X – linked snakeskin. To start I took the original P generation lace male and bred him generation to several related females. I again used him for the next generation on his F1 daughters, and again on his F2 granddaughters.



F1 Vienna Type Lower Swordtail

There was nothing unusual as the young F3 males started to colour up. That is until about 2/3's of them were clearly showing filigran and the start of double swords. At this point I noticed two youngsters clearly were not only multi colored, but lower swords



F1 Vienna Type Lower Swordtail

These two males above are for all intent and purpose the start of my strain of my Vienna swords and its multiple lines I have raised and shown for the last 7-8 years. Why go through all the trouble when one could have purchased a good line of Vienna's? To me the fun & excite of guppy breeding goes beyond the incredible aesthetic value of eye appeal. While I enjoy reading up on genetic research and principles, knowledge acquired from first hand experience or breeder exchange is what has held my interest. Like many breeders, I find satisfaction in creating distinct phenotypes.

With these two "Vienna type" lower males in hand, I now had the basis for creating not only a true Vienna Emerald Swordtail, but a whole host of related phenotypes. While my new males had Emerald Green peduncles, they did not come close to meeting the standard for a true Vienna Emerald. Hence, I refer to this phenotype as a "Vienna Type" and not a "Vienna Emerald" which has Zibrinus barring and alot of eticulation . This would come in several more generations. For the next generation I sib bred, along with the addition of grey and gold (blond) females from Penchoff Full Red Double Swords. The latter would reinforce the very long flowing & blunt tipped dorsal predominant in my lines.



F2 Vienna Type Double Swordtail

In the F2 resulted the one and only true double sword produced with this strain. While of Vienna type, he was not a Vienna Emerald. I showed him in most shows that year. He would take first place in one show and drop down a place or two being faulted for caudal /dorsal match the next. If ever there was a true Y – link double sword he appeared to be, from the start both top and lower rays tailed out at a matching rate. He never produced a double sword offspring. Yet, to this day several of my lower lines produce to varying degrees Lower Sword males with very small colored top swords. These I rarely breed, and will often cull all sibling females from a drop with this trait, on the assumption Vienna Doubles are a combination of Y- link lower sword and X – link top sword.

If you notice the dorsal / caudal color in the first two lower males it is white. In the following generations recessive yellow dorsals and caudals started to appear, although not always in a match. While this is common in European Vienna lines, I believe I enhanced the color in my stocks from an infusion of Tomoko Young's Yellow Albino Lower Swords. She had kindly sent me several trios from Hawaii about the time she shut down her breeding program. I eagerly incorporated their traits into my newly evolving lines.

By the F5 I had a recognizable strain. I have not deliberately introduced any IFGA stocks to this effort, although it is likely their genes existed in those stocks I infused. When possible I always select for matching yellow caudal / dorsal, or at least a solid, dark yellow dorsal. During this process I produced some super looking gold (blond) fish with matching white dorsal / caudal that did very well on the show bench. They were very clean with little spotting in the fins. If I had any sense I would have pursued this route instead of yellow, but the latter just appeals to my eye.

Another notable that occurred around this time was the expression of either green or purple as a base body color. This has been easily maintained by routinely using 3-5 females in breeding groups. In grey bodies it expresses more as lavender and in gold (blond) more pink. Back in the early mid 1980's I ran a line of Multi Deltas with similar base colours. Though clear tailed, when females were coloured tested with hormone laced food, they easily expressed either color. I have never felt a need to test my sword females, and assume results would be similar. They often pass an X-link for yellow dorsal color.



Purple Base Body Colour

Between the F5-10 I had managed to establish several distinct phenotypes in my Vienna strain that included:

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| 1. Both grey and gold (blond) body color - | 2. RREA Albino - a |
| 3. Vienna Emerald Pattern | 4. Purple & green base body color |
| 5. Emerald Green Iridescent – Smlr | 6. Zebrinus –Ze |
| 7. Partial Snakeskin – Ssb (limited to shoulders only) | 8. Several other genes identified by Winge in 1927 |



Long Flowing Caudal

Fin length by this time was becoming exceptionally long from selection of mature males as breeders. Vienna type on average were much longer than true Vienna Emerald's.

Outside of extra long yellow finnage, my single most selected trait is Emerald Green Iridescent (Smaragd Iridenscens). I should expand upon this and say I select for Smlr expressed in the entire body and not just in the peduncle as a green spot. The effect is very intense and dramatic vs. siblings without. I'll trade off on a lot of other traits, but this is normally not one of them. While fish exhibiting this phenotype are not always the largest in a litter, this is not a concern as I'm not interested in breeding large fish to begin with. I've never quite understood North Americans fixation on producing excessively large bodies in stock. Be it cattle, sheep or fish.

Lower Male - Emerald Green Iridescent
(Smaragd Iridenscens)

As of 2011 my Vienna Emerald Strain is generation F20 or more from its appearance out of Lace Snakeskin Doubles going on eight years ago. In part I owe its continuance to Gabriel Niculescu of VA. I had sent him a box of fish just prior to leaving MT. He was kind enough to return the favor 18 months later. Plans for this line? In the early years I bred 3-4 generations a year. These days the pace has slowed to 2-3. I am looking more at traits that express themselves later in life and not just sexual maturity. Increased caudal / dorsal length, certain color patterns, retention of color intensity and length of roundtail (area between colored rays), late age vigor and robustness to name a few.



Few, if any, strains can survive harsh selection without suffering the effects of lethal mutations that arise via a heterozygote in dominant form or homozygote in recessive. In the wild nature will circumvent genetic bottlenecks resulting from "small island populations", as your fishroom, through mutation by genetic drift. Many breeders attempt this by obtaining similar genotype from outside their fishroom. Even when from "co-operator" programs this approach can throw your strain into turmoil in subsequent generations with recombination of genes and alleles.

Strive to identify and preserve the genotype found within the strain by expression of diverse phenotypes. At times these are very subtle and long hours of observation help identify them. Many guppy traits, especially in Swordtails, are Y-linked, still don't forget to pay attention to your females. I rely on the use of a magnifying glass more often than not. While a common practice with many show circuit breeders, I find it a waste of time & space to artificially prop up a strain with lines of genetic dead-ends, i.e. "hybrid crosses", which will never be bred. Each drop of each line is evaluated and has the opportunity to contribute to the next generation of offspring.



The strain seems hardier than ever from a breeding program based *not* on trying to split off each phenotype into independent homozygous lines of their own, but rather on identifying compatible gene complexes. Yes, they are maintained in several lines within the strain in homozygous and heterozygous form. I can outsource from within.



In a nut shell, "I breed by eye", not to be confused with being "a sight breeder". Is there a difference? The latter tends to try and do things strictly from memory without written or photographic records. I collect and record knowledge from a variety of sources. Spend long hours observing my stock and then make breeder selection by eye and not solely based on an artificial standard.



Balance your breeding with a combination of breeding trios and breeding groups across the lines. Outsource for a reason, boredom should not be one of them.